

**PROCEEDINGS OF THE FIRST CONFERENCE OF THE  
INTERNATIONAL LINEAR ALGEBRA SOCIETY****Special Editors: Wayne Barrett, Daniel Hershkowitz,  
and Donald Robinson**

PREFACE .....	1
GEORGE W. SOULES (Princeton, New Jersey)	
The Rate of Convergence of Sinkhorn Balancing .....	3
MARVIN MARCUS (Santa Barbara, California)	
Multilinear Methods in Linear Algebra .....	41
RUSSELL MERRIS (Hayward, California)	
Almost All Trees Are Co-immanantal .....	61
DANIEL J. SCULLY (Saint Cloud, Minnesota)	
Maximal Rank-One Spaces of Matrices Over Chain Semirings.	
I. u-Spaces .....	67
RONALD J. STERN (Montreal, Quebec, Canada) AND	
HENRY WOLKOWICZ (Waterloo, Ontario, Canada)	
Invariant Ellipsoidal Cones .....	81
BOB GRONE AND STEVE PIERCE (San Diego, California)	
Extremal Positive Semidefinite Doubly Stochastic Matrices .....	107
SHMUEL FRIEDLAND (Chicago, Illinois)	
Pairs of Matrices Which Do Not Admit A Complementary	
Triangular Form .....	119
JEROME DANCIS (College Park, Maryland)	
Invertible Completions of Band Matrices .....	125
R. LOEWY, D. R. SHIER, AND C. R. JOHNSON	
(Williamsburg, Virginia)	
Perron Eigenvectors and the Symmetric Transportation	
Polytope .....	139
I. GOHBERG (Ramat Aviv, Israel), M. A. KAASHOEK	
(Amsterdam, The Netherlands), AND H. J. WOERDEMAN	
(La Jolla, California)	
A Note on Extensions of Band Matrices With Maximal and	
Submaximal Invertible Blocks .....	157
ROBERT GRONE (San Diego, California)	
On the Geometry and Laplacian of a Graph .....	167

*Table of Contents Continued*

CHI-KWONG LI (Williamsburg, Virginia) AND NAM-KIU TSING (COLLEGE PARK, MARYLAND)	
<i>G</i> -Invariant Norms and <i>G</i> ( <i>c</i> )-Radii . . . . .	179
MICHAEL E. LUNDQUIST (Provo, Utah) AND CHARLES R. JOHNSON (Williamsburg, Virginia)	
Linearly Constrained Positive Definite Completions . . . . .	195
RAFAEL BRU (Valencia, Spain), LEIBA RODMAN (Williamsburg, Virginia), AND HANS SCHNEIDER (Madison, Wisconsin)	
Extensions of Jordan Bases for Invariant Subspaces of a Matrix . . . . .	209
R. A. BRUALDI (Madison, Wisconsin) AND J. CSIMA (Hamilton, Ontario, Canada)	
Small Matrices of Large Dimension . . . . .	227
YIK-HOI AU-YEUNG AND CHE-MAN CHENG (Hong Kong)	
Permutation Matrices Whose Convex Combinations Are Orthostochastic . . . . .	243
JEFFREY L. STUART (Hattiesburg, Mississippi) AND JAMES R. WEAVER (Pensacola, Florida)	
Matrices That Commute With a Permutation Matrix . . . . .	255
JEAN H. BEVIS AND FRANK J. HALL (Atlanta, Georgia)	
Integer LU-Factorizations . . . . .	267
PÁL RÓZSA (Budapest, Hungary), ROBERTO BEVILACQUA, FRANCESCO ROMANI, AND PAOLA FAVATI (Pisa, Italy)	
On Band Matrices and Their Inverses . . . . .	287
CHARLES R. JOHNSON (Williamsburg, Virginia) AND ERIK A. SCHREINER (Kalamazoo, Michigan)	
Explicit Jordan Form for Certain Block Triangular Matrices . . . . .	297
JORMA KAARLO MERIKOSKI (Tampere, Finland)	
On c-Norms and c-Antinorms on Cones . . . . .	315
R. B. BAPAT (New Delhi, India)	
An Interlacing Theorem for Tridiagonal Matrices . . . . .	331
OLGA TAUSKY AND JOHN TODD (Pasadena, California)	
Another Look at a Matrix of Mark Kac . . . . .	341
M. C. GOUVEIA (Coimbra, Portugal) AND R. PUYSTJENS (Gent, België)	
About the Group Inverse and Moore-Penrose Inverse of a Product . . . . .	361

HANS JOACHIM WERNER (Bonn, Germany)	
Some Further Results on Matrix Monotonicity	371
YAIR CENSOR (Haifa, Israel) AND STAVROS A. ZENIOS	
(Philadelphia, Pennsylvania)	
Interval-Constrained Matrix Balancing	393
SHMUEL FRIEDLAND (Chicago, Illinois)	
Quadratic Forms and the Graph Isomorphism Problem	423
H. BART (Rotterdam, The Netherlands) AND H. K. WIMMER	
(Würzburg, Germany)	
Simultaneous Reduction to Triangular and Companion Forms of Pairs of Matrices: The Case $\text{rank}(I - AZ) = 1$	443
WAYNE BARRETT, DONALD ROBINSON (Provo, Utah), AND DANIEL HERSHKOWITZ (Haifa, Israel)	
REPORT: Inaugural Conference of the International Linear Algebra Society, 12–15 August 1989, Brigham Young University, Provo, Utah, USA	463
AUTHOR INDEX	551

